REMARKS/ARGUMENTS

Regarding Amendments

On the coversheet of the specification, the name of the state where the assignee company is incorporated is corrected.

Claim Status

Claims 1-28 are now pending. No claims stand allowed.

The 35 U.S.C. §103 Rejection

Claims 1-5, 8-11, and 22-28 stand rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Koren (U.S. Pat. No. 6,218,872) in view of Bisson et al. (U.S. Pat. No. 6,323,686), among which claims 1, 5, 22, and 24 are independent claims.

This rejection is respectfully traversed.

According to M.P.E.P. §2143,

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in the applicant's disclosure.

Furthermore, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

Claim 1 defines a transformer for coupling signals between a transceiver and a transmission line, said transceiver including a driver circuit for supplying a transmit signal to said transformer and a receiver circuit for receiving a receive signal from said transformer. The transformer comprises (a) a first port adapted to being coupled to the transmission line, (b) a second port adapted to being coupled to the driver circuit, (c) a third port adapted to being coupled to the receiver circuit, (d) a first winding part having a turns ratio of 1: n, where n >1, for coupling the transmit signal from said second port to said first port, and (e) a second winding part having a turns ratio of 1: m, where m < n, for coupling the receive signal from said first port to said third port, as recited in claim 1.

In the Office Action, the Examiner alleges that Koren discloses the claimed transformer except the first winding part's turns ratio of 1: n, where n >1, and the second winding part's turns ratio of 1: m, where m < n. The Examiner specifically equates Koren's transformer **20** (primary coil **21** and secondary coil **23**) with the claimed first winding part, and Koren's tertiary coil **52** with the claimed second winding part, by citing FIG. 5 and column 2, lines 7-21 of Koren. However, Applicants respectfully disagree for the following reasons.

The cited portion of Koren (column 2, lines 7-21) describes as follows:

In preferred embodiments of the present invention, a transmit circuit of a modem, preferably an Asymmetric Digital Subscriber Line (ADSL) modem, is coupled by a line driver to a transmission line. The line driver **50** comprises an operational amplifier **24**, a transformer **20** which is most preferably connected as an autotransformer, and a balancing network **22**. An inverting input **25** of the amplifier is shunted by the network **22**, and also receives feedback from the amplifier output **31** via a primary coil **21** of the transformer **22**, so that the feedback is negative. A secondary coil **23** of the transformer **20** is connected in series between the amplifier output **31** and the line **12** being driven. A

transmit port **26** is formed between the non-inverting input **27** of the amplifier **24** and a ground **14**, and a receive port **28**, for conveying signals received over the line to a receive circuit **13** of the modem **11**, is formed between the inverting input **25** of the amplifier **50** and the line **18**. (Numeral references provided.)

As is also shown FIG. 5 of Koren, the modem **11** includes transmit/receive circuitry **13** and a line driver **50**. In Koren, as clearly shown in FIG. 5 (as well as other figures) thereof, the operational amplifier **24** supplies the transmit signal (Tx) to the transformer **20**, and the transmit/receive circuitry **13** receives the receive signal (Rx) from the tertiary coil **52** (the alleged second winding part). Thus, the operational amplifier **24** must be the alleged driving circuit, and the transmit/receive circuitry **13** must be the alleged receiving circuit.

Regarding the claimed ports of the transformer, the above-cited Koren only teaches two ports, namely, the transmit port **26** and the receive port **28** (also see figures). Since the transmit port **26** is coupled to the operational amplifier **24** (the alleged driver circuit), and the receive port **28** is coupled to the transmit/receive circuitry **13** (the alleged receive circuit), they are allegedly the second port and the third port, respectively. However, the transformer **20** is only coupled to the signal lead **16**, the output **31** of the operational amplifier **24**, the other input **25** of the operational amplifier **24**, and the ground lead **14** through a network **22**, as shown in FIG. 5 of Koren. The transmit port **26** is only coupled to the input **27** of the operational amplifier **24**. There is no coupling between the transformer **20** and the transmit port **26** in Koren, and thus Koren's alleged transformer **20** lacks the second port as recited in claim 1. Therefore, although the signal lead **16** may allegedly constitute "the first port" coupled to the transmission line **12**, the

transformer **20** of Koren does not couple the transmit signal (Tx) from the transmit port **26** (the alleged second port) to the signal lead **16** (allegedly the first port), as recited in claim 1.

Furthermore, in Koren, the tertiary coil **52** (the alleged second winding part) shown in FIG. 5 is only coupled to the receive port **28** (the alleged third port), and is not coupled to the signal lead **16** (the alleged first port). Thus, in Koren, the tertiary coil **52** also fails to couple the transmit signal *from the first port* to the third port, as recited in claim 1.

In addition, it should be noted that the tertiary coil **52** is a single coil as shown in FIG. 5 of Koren. Thus, unless the tertiary coil **52** is also an autotransformer (i.e., single coil with a common node dividing the number of turns), it cannot have any turns ratio. Koren only mentions using a single total number of turns of the coil **52** (column 6, lines 40-46), and thus Koren fails to teach or suggest the single-coil **52** (the alleged second winding part) having any turns *ratio*, which inherently requires two numbers, as recited in claim 1. In addition, since the total number of turns of the coil **52** is adjusted to scale the receive signal impedance Z_{rx} with respect to the total number of turns of transformer **20** (column 6, lines 43-46 of Koren), Koren actually teaches away from dividing the coil **52** such that the coil **52** itself having any turns ratio.

Regarding Bisson, the Examiner alleges Bisson teaches the claimed specific turns ratios, i.e., the first winding part's turns ratio of 1: n, where n >1, and the second winding part's turns ratio of 1: m, where m < n. However, Applicants respectfully disagree.

Bisson describes a dual transformer driver circuit **40** (FIG. 4 thereof). However, since Bisson only teaches the "driver" circuit, Bisson only teaches providing the transformer **46** (windings **43** and **50**) for the transmit signal (Tx), and fails to mention any transformer or windings in the receive signal path at all. Thus, even if Bisson's teaching should be combined with Koren, as the Examiner alleges, one of ordinary skill in the art would modify Koren's transformer **20** in the transmit signal path, not the coil **52** in the receive signal path, such that the transformer **20** has two turns ratios "n1" and "n2" instead of one ratio "n". In addition, Koren teaches away from providing any turns ratio to the coil **52**, as discussed above, Koren also discourages such a modification on the receive signal path by Bisson's teaching.

Therefore, Koren, whether considered alone or combined with or modified by Bisson, does not teach or suggest the transformer as recited in claim 1. Claims 5, 22, and 24 also include substantially the same distinctive feature as claim 1.

Accordingly, it is respectfully requested that the rejection of claims based on Koren and Bisson be withdrawn. In view of the foregoing, it is respectfully asserted that the claims are now in condition for allowance.

Dependent Claims

Claims 2-4 depend from claim 1, claims 6-21 depend from claim 5, claim 23 depends from claim 22, and claims 25-28 depend from claim 24, and thus include the limitations of the corresponding independent claims. The argument set forth above is equally applicable here. The base claims being allowable, the dependent claims must also be allowable at least for the same reasons.

In view of the foregoing, it is respectfully asserted that the claims are now in condition for allowance.

Request for Allowance

It is believed that this Amendment places the above-identified patent application into condition for allowance. Early favorable consideration of this Amendment is earnestly solicited.

If, in the opinion of the Examiner, an interview would expedite the prosecution of this application, the Examiner is invited to call the undersigned attorney at the number indicated below.

The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 12-2252 (LSI Logic Corporation).

Respectfully submitted,
THELEN REID & PRIEST, LLP

Dated: March 3, 2004

Masako Ando
Limited Recognition under 37 CFR §10.9(b)

Thelen Reid & Priest LLP
P.O. Box 640640
San Jose, CA 95164-0640
Tel. (408) 292-5800
Fax. (408) 287-8040